



## Sewage treatment

That space research can be utilized for much cleaner, cheaper sewage treatment probably is the ultimate in technology transfer. Yet a million-gallon-a-day municipal pilot plant will begin operating this year using a remarkable Jet Propulsion Laboratory-developed carbon-conversion process.

The new sewage plant, to be built at Huntington Beach between Los Angeles and San Diego, converts solid sewage to activated carbon. The carbon then treats incoming wastewater.

Activated carbon originally was sought as a lightweight rocket engine insulator. Sewage solids made an excellent raw material for the insulation material. And the resultant product proved to be a good agent for further sewage treatment.

Most municipal sewage plants in the U.S. today provide only primary treatment. That means about 40% of solids in raw sewage are discharged into the nation's rivers and offshore waters. Tens of billions of dollars would have to be spent to upgrade existing facilities with secondary-treatment installations to comply with new environmental laws. The significance of the new method is underscored when you realize that even secondary treatment fails to eliminate solid wastes.

The NASA system of making activated carbon

*Million-gallon-a-day sewage-treatment plant in Huntington Beach, Calif., converts solid sewage to activated carbon, which then treats incoming wastewater. The plant is scaled up 100 times from mobile unit NASA installed a year ago; another 100-fold scale-up will be required if technique is employed for widespread urban sewage treatment. the unique sewage plant is a serendipitous outgrowth of a need to manufacture activated carbon for rocket-engine insulation.*

out of the solids by high-temperature heating is an engineering breakthrough. The newly made carbon is recycled back with new sewage solids and reacted, virtually closing the loop. Eventually a comparatively small amount of ash is extracted from the process. It is the only residue. And—like the squeal of the pig—the space-transferred system even uses the gases generated from the sewage as a source of power.

The California million-gallon plant is 100 times larger than a mobile unit the NASA laboratory installed there a year ago. If the technique is adopted for widespread urban waste-treatment, another 100-fold scale-up will be required.

The process already exceeds new Environmental Protection Agency standards for ocean discharges. It also reduces capital costs by 25% compared with conventional secondary-treatment plants.